

BASIS FOR THE AMENDMENT

Claims 10-36 are active in the present application. Claims 13 and 14 are non-elected claims currently withdrawn from prosecution. Claims 33-35 are amended to correct a typographical error.

No new matter is added.

REQUEST FOR RECONSIDERATION

The presently pending claims stand rejected as anticipated or obvious in view of a patent to Tsubakimoto (U.S. 4,625,001). The Office is of the opinion that Tsubakimoto discloses all of the present claim limitations. Applicants submit that this is not correct. For example, present independent Claim 10 reads:

...the copolymerizing is carried out...by continuously feeding...the monomers into a mixing kneader having at least two axially parallel rotating shafts having a plurality of kneading and transporting elements to convey the monomer mixture from an upstream end of the mixing kneader in the axial direction toward a downstream end of the mixing kneader by the continuous conveying action of the transporting elements of the rotating shafts...

The presently claimed invention requires that the monomer mixture is conveyed in an axial direction relative to the orientation of two parallel rotating shafts from an upstream end to a downstream end of a mixing kneader.

Figure 1 of Tsubakimoto shows the reaction vessel used for the prior art method (column 4, lines 46-47). While Figure 1 of Tsubakimoto may disclose a mixing kneader having at least two rotating shafts arranged in a parallel orientation, it is evident that the mixing kneader of Figure 1 of Tsubakimoto does not convey material from an upstream end to a downstream end in an axial manner. Instead, the mixing kneader of Figure 1 includes a horizontal shaft identified as reference no. 8 in Figure 1 which provides a means for the mixture to overflow out of the prior art mixing kneader. In contrast to the presently claimed invention, the mixing kneader of Figure 1 does not convey the monomer mixture in an axial direction from an upstream end to a downstream end. Instead, the mixing kneader of Figure 1 of Tsubakimoto takes the monomer mixture added by the raw material feed tube identified as reference no. 2, mixes the monomer mixture with parallel rotating stirring shafts identified as reference no. 6 then permits the mixed material to flow over a weir through a horizontal shaft which functions as the product outlet (column 4, lines 59-67).

Applicants note that the presently claimed invention requires the conveyance of the monomer mixture from an upstream end to a downstream end of the mixing kneader along an axial direction of parallel rotating shafts. While Figure 1 of Tsubakimoto may describe the conveyance of a monomer mixture from an upstream portion of a mixing kneader (e.g., the upstream portion representing the raw material feed reference no. 2) to a downstream portion (e.g., horizontal shaft product output reference no. 8), the conveyance in the prior art is not along an axial direction of the rotating shafts. Instead, the conveyance in the mixing kneader of Figure 1 occurs along a parallel orientation of the rotating shafts.

The mixing kneader shown in prior art Figures 4 and 5 may also be used to convey material in the prior art process. However, as mentioned above for Figure 1 of Tsubakimoto, the mixing kneader of Figures 4 and 5 is not capable of providing the axial transport (e.g., conveyance of monomer mixture) recited in the present claims. For example, the mixing kneader of Figures 4 and 5 includes parallel rotary stirring shafts identified by reference no. 26. The stirring shafts are described to be “Banbury type stirring blades” (column 5, lines 34-35). Nowhere in Tsubakimoto is it disclosed or suggested that the parallel rotary stirring shafts of Figures 4 and 5 include transporting elements. In fact, Tsubakimoto discloses only that these parallel rotary stirring shafts use stirring blades, not transport elements.

The stirring blades of Figures 4 and 5 of Tsubakimoto do not convey the prior art monomer mixture in an axial direction from an upstream end to a downstream end of the prior art mixing kneader. Instead, the mixing kneader of prior art Figures 4 and 5 requires an additional discharge screw identified by reference no. 29 to convey the material out of the prior art mixing kneader (column 5, lines 40-49).

Applicants thus submit that, contrary to the Office’s assertion, the mixing kneader of Tsubakimoto cannot carry out the manipulative step of conveying a monomer mixture in an

axial direction from an upstream end to a downstream end of a mixing kneader by using two axially parallel rotating shafts having kneading elements and transporting elements.

Applicants submit that because Tsubakimoto does not disclose all of the present claim limitations, Tsubakimoto cannot anticipate the presently claimed subject matter.

Applicants further submit that the presently claimed invention is not obvious in view of Tsubakimoto. For example, Applicants submit that those of ordinary skill in the art readily recognize that a mixing kneader having only mixing elements will result in significant back mixing of the monomer mixture present in the mixing kneader. Applicants submit that, in fact, this is the purpose of a mixing device, e.g., to ensure good mixing of all of the material present within the mixing kneader. However, this is different from the claimed invention which requires the conveyance of material down an axial path defined by two rotating shafts having conveying elements. In the extruder-type apparatus recited in the present claims, the monomer mixture is conveyed axially down the rotating shafts from an upstream end to a downstream end of the mixing kneader. Such an orientation minimizes the occurrence of backflow and back-mixing and instead quickly moves the monomer mixture from an upstream section to a downstream section of the mixing kneader. As was argued in previous responses filed in the present case, the monomer mixture will have a shorter residence time in the mixing kneader of the invention in comparison to the prior art (i.e., Tsubakimoto) mixing kneader.

Applicants submit herewith a patent to Dötsch (U.S. 5,407,266) which describes a mixing kneader according to the claimed invention. As the Office will readily appreciate, Figure 1 of Dötsch describes a mixing kneader having axially parallel rotating shafts. The mixing kneader of Figure 1 includes a charging branch identified by ref. no. 3 and an outlet branch identified by ref. no. 4. It is evident that material added to the charging branch moves from an upstream to a downstream section along an axial direction defined by two parallel

rotating shafts (i.e., ref. no. 7) and then exits the mixing kneader through the outlet (e.g., ref. no. 4).

A comparison of Figure 1 of Dötsch with the figures of Tsubakimoto should make it clear that the mixing kneader of the claimed invention is substantially different from the mixing kneader of the prior art cited by the Office. This difference is reflected in the claimed invention wherein the manipulative step that includes conveying the monomer mixture is recited in a form that cannot be carried out by the mixing kneaders of Tsubakimoto.

Tsubakimoto even goes so far to distinguish the prior art process from extrusion-type processes by stating the following:

The method of this invention is entirely different in operating principle from the method of Japanese Patent Laid-Open No. SHO56(1981)-32514 which causes the materials to be moved in a manner of piston flow from the entrance to the exit... (Column 8, lines 11-15).

It is evident that Tsubakimoto is distinguishing the prior art process from mixing/polymerization processes carried out in extruder equipment because Tsubakimoto discloses that the prior art process is one that is “entirely different” from a process wherein the monomer mixture is conveyed in a “piston flow” manner. The presently claimed invention is not obvious in view of Tsubakimoto’s teaching away from extruder-type equipment.

Applicants thus submit the presently claimed invention is not obvious in view of Tsubakimoto.

In the Office Action of April 7, 2006, the Office restricted out new Claim 36 from further prosecution by alleging constructive election. As a basis for withdrawing Claim 36 from prosecution, the Office stated “the originally claimed invention required at least 5% of the heat of reaction to be removed by evaporation of water. See Claims 16-17 and 23.”

Applicants submit that this makes no sense. The originally claimed invention was not limited to the embodiments of Claims 16-17 and 23. In fact, the originally presented invention, now Claim 10, encompassed embodiments wherein no heat is removed through water evaporation.

The Office cites to M.P.E.P. §821.03 and 37 C.F.R. §1.142(b) as support for the constructive election. M.P.E.P. §821.03 cites to 37 C.F.R. §1.145 which states the following:

If, after an office action on an application, the applicant presents claims directed to an invention distinct from and independent of the invention previously claimed, the applicant will be required to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review....

Applicants submit that new dependent Claim 36 added in the Amendment filed on March 3, 2006 is a dependent claim, dependent from independent Claim 10. Thus the new claim is not “independent of the invention previously claimed” and the Office’s basis for alleging constructive election is improper. Applicants submit the restriction of new dependent Claim 36 is not supportable and Claim 36 should be rejoined and examined.

For the reasons discussed above, Applicants submit that all active, now-pending claims are in condition for allowance. Applicants request the withdrawal of the rejections and mailing of a Notice of Allowability.

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